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Research Article

## Annoyance from transportation noise: relationships with exposure metrics DNL and DENL and their confidence intervals.

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### Abstract

We present a model of the distribution of noise annoyance with the mean varying as a function of the noise exposure. Day-night level (DNL) and day-evening-night level (DENL) were used as noise descriptors. Because the entire annoyance distribution has been modeled, any annoyance measure that summarizes this distribution can be calculated from the model. We fitted the model to data from noise annoyance studies for aircraft, road traffic, and railways separately. Polynomial approximations of relationships implied by the model for the combinations of the following exposure and annoyance measures are presented: DNL or DENL, and percentage "highly annoyed" (cutoff at 72 on a scale of 0-100), percentage "annoyed" (cutoff at 50 on a scale of 0-100), or percentage (at least) "a little annoyed" (cutoff at 28 on a scale of 0-100). These approximations are very good, and they are easier to use for practical calculations than the model itself, because the model involves a normal distribution. Our results are based on the same data set that was used earlier to establish relationships between DNL and percentage highly annoyed. In this paper we provide better estimates of the confidence intervals due to the improved model of the relationship between annoyance and noise exposure. Moreover, relationships using descriptors other than DNL and percentage highly annoyed, which are presented here, have not been established earlier on the basis of a large dataset.

### Full Text

The Full Text of this article is available as a [PDF](#) (103K).

### Selected References

These references are in PubMed. This may not be the complete list of references from this article.

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